

Remarks

Reconsideration is requested in view of the above amendments and the following remarks. Claims 11, 12, 22 and 43 have been canceled without prejudice or disclaimer. Claims 1, 5, 6, 9, 10, 14-16, 19-21, 23-29, 31, 33, 35-37, 40-42, 44 and 48 are amended. New claims 49-51 are added. Claims 1-10, 13-21, 23-42 and 44-51 are pending.

Claim 1 is amended to recite that the light energy delivery apparatus transmits pulsed light comprising at least one pulse event, and that the delivery apparatus inhibits a following light pulse event if the time elapsing after a preceding light pulse event is less than a predetermined time or greater than a predetermined time. Claim 1 is also amended to remove "means" language. The changes are supported by the original disclosure, for example page 5, line 29 to page 6, line 15 and original claims 11 and 12. Claims 11 and 12 are canceled as a result of the amendments to claim 1.

Claims 5, 6, 9, 10, 14, 15, 16, 19, and 20 are amended to use language consistent with claim 1. Claim 15 is also amended to improve the form thereof.

Claim 21 is amended to recite a light energy delivery head with a light emitting element that transmits non-laser, pulsed light energy comprising at least one light pulse event, a base unit with a supply of electrical power for the light emitting element, and a flexible umbilical extending between and connecting the base unit and the delivery head. Claim 21 is also amended to remove "means" language. The changes are supported by the original disclosure, for example page 13, line 27 to page 14, line 20; and page 15, lines 5-7. Claims 22 and 43 are canceled as a result of the amendments to claim 21.

Claims 24-29, 31, 33, 35-37, 40-42 and 44 are amended to use language consistent with claim 21 and/or to improve the form thereof.

Claim 48 is amended to recite the optical delivery device as directing pulsed light through the panel, and that at least one parameter of the pulsed light can be altered. Claim 48 has also been amended to remove reference to the tint of the panel. The changes are supported by the original disclosure, for example page 3, line 4.

New claim 49-51 are supported by the original disclosure, for example page 7, line 1 and original claim 23.

Applicants reserve the right to pursue one or more of the canceled claims in a later filed application.

Turning now to the office action, claims 1-10, 13-18, 21-25, 30-34, 38-41 and 45-46 are provisionally rejected under 35 USC 101 as claiming the same invention as that of claims 1-7, 10-32 and 48 of copending application 09/184,186.

Applicants respectfully traverse this rejection. Applicants disagree with this rejection and respectfully request that the Examiner reconsider the rejection in light of the amendments made to the claims herein and to the claims in 09/184186. However, Applicants have withheld any detailed comments, arguments and papers which will otherwise overcome this rejection until the claims have been found otherwise patentable.

The Examiner has also rejected claims 1-48 under 35 USC 103(a) as being unpatentable over Burkart et al. (Canada 2,073,092) in view of Gofuku et al. (US 5,269,868). Applicants respectfully traverse this rejection.

With respect to claim 1, this claim recites a method of releasing a glazing panel from a frame. The method includes arranging a pulsable light energy delivery apparatus adjacent the panel, and operating the delivery apparatus to transmit pulsed light energy comprising at least one light pulse event through the glazing panel to effect release of the panel from the frame. The delivery apparatus is controlled to inhibit a following light pulse event if the time elapsing after a preceding light pulse event is less than a predetermined time or greater than a predetermined time.

As disclosed, the use of continuous wave energy creates excessive heat build-up in the panel, which increases the power that is required to achieve release, and which can damage the panel (page 12, lines 15-29). By using pulsed light energy, the heat absorbed in the panel can have time to dissipate, thereby increasing the effectiveness of the process (page 13, line 9-14).

Burkart et al. teaches a releasable joint between two elements. The joint includes at least adhesive bead and a heatable separating member that is heated to effect release of the joint.

Burkart et al. does not teach a light energy delivery apparatus that is pulsable to deliver pulsed light energy. Nor does Burkart et al. suggest the advantages that arise from the use of pulsed light energy in removing a glazing panel.

Gofuku et al. teaches a method of separating bonded substrates that are used in a liquid crystal display device. The substrates include first and second glass sheets 1, 2 and an adhesive 5 between the sheets. A laser beam 8 is used to heat the adhesive 5 to permit release of the sheets. Gofuku et al. does not teach a light energy delivery apparatus that is pulsable to deliver pulsed light energy, nor the advantages that arise from the use of pulsed light energy in removing a glazing panel.

Therefore, Burkart et al. and Gofuku et al. do not render claim 1 unpatentable, because, even if combined, the claimed invention does not result. The combined teachings of the references fail to teach the use of pulsed light energy to effect release of a glazing panel from a frame.

Claims 2-10 and 13-19 depend from claim 1 and are patentable along with claim 1 and need not be separately distinguished.

With respect to claim 21, this claim recites apparatus for releasing a glazing panel from a frame. The apparatus includes a light energy delivery head that includes an electrically operable light emitting element that is operable to transmit non-laser, pulsed light comprising at least one light pulse event. The apparatus also includes a base unit with a supply of electrical power remote from the delivery head, and a flexible umbilical extending between and connecting the base unit and the delivery head.

Burkart et al. and Gofuku et al. are discussed in more detail above, and a detailed discussion will not be repeated here. In short, Burkart et al. and Gofuku et al., singly or in combination, do not teach pulsing the light energy. Nor do these references teach or suggest the base unit or flexible umbilical as claimed. Therefore, claim 21 is patentable over Burkart et al. and Gofuku et al.

Claims 23-42 and 44 depend from claim 21 and are patentable along with claim 21 and need not be separately distinguished.

With respect to claims 45 and 46, these claims recite a flashlamp producing pulsed light. Burkart et al. and Gofuku et al. do not teach pulsing the light energy. Therefore, claims 45 and 46 are patentable over Burkart et al. and Gofuku et al.

With respect to claims 47, these claims recite a glazing panel releaser that includes a safety input apparatus requiring at least two input devices to be manually actuated before light energy is delivered by the glazing panel releaser.

Burkart et al. and Gofuku et al. do not teach a safety input apparatus that requires at least two input devices to be manually actuated before light energy is delivered. There is simply no disclosure of such a safety feature, nor the advantages that are derived from such a safety feature. Therefore, claim 47 is patentable over Burkart et al. and Gofuku et al.

With respect to claim 48, this claim recites a glazing panel releaser with an optical delivery device to direct pulsed light through the glazing panel, and a control panel apparatus that includes different settings to alter at least one parameter of the pulsed light energy that is delivered.

As discussed above, Burkart et al. and Gofuku et al. do not teach the use of pulsed light energy. Therefore, neither reference teaches or suggests an apparatus to enable alteration of a parameter of the pulsed light energy. Therefore, claim 48 is patentable over Burkart et al. and Gofuku et al.

Favorable reconsideration is respectfully requested.


CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request favorable action on this matter. If a telephone conference would be helpful in resolving any remaining issue in this application, the Examiner is invited to contact the undersigned by telephone at the number provided below.

Respectfully submitted,

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S/N 09/346,375

PATENTIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	CLEMENT et al.	Examiner:	M. ELVE
Serial No.:	09/346,375	Group Art Unit:	1725
Filed:	July 1, 1999	Docket No.:	7500.377US12
Title:	RELEASING OF GLAZING PANELS		

Marked-Up Copy Showing Changes MadeIn the Claims

Claims 11, 12, 22, 43 are canceled without prejudice or disclaimer.

Claims 1, 5, 6, 9, 10, 14, 15, 16, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 31, 33, 35, 36, 37, 40, 41, 42, 44, and 48 have been amended as follows.

1. (Twice Amended) A method of releasing a glazing panel from a frame to which the panel is bonded by interposed bonding material, the method comprising:
- arranging a pulsable light energy delivery [means] apparatus adjacent the glazing panel; and
 - operating the light energy delivery [means] apparatus to transmit pulsed light energy comprising at least one light pulse event through the glazing panel to effect [thermal] release of the glazing panel from the frame, wherein the light energy delivery apparatus is controlled to inhibit a following light pulse event if the time elapsing after a preceding light pulse event is less than a predetermined time or greater than a predetermined time.

5. (Amended) A method according to claim 1, wherein the light energy attenuates significantly with distance such that a few centimeters from the energy delivery [means] apparatus the light energy density is significantly diminished from its maximum value.

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6. (Amended) A method according to claim 5, wherein at a distance substantially in the range 5cm or less from the delivery [means] apparatus the light energy density is 50% maximum value, or below.

9. (Amended) A method according to claim 8, wherein the pulse duration (T on) of [a] the light pulse event is substantially in the range 1 μ s-100ms.

10. (Amended) A method according to claim 9, wherein the pulse duration of [a] the light pulse event is substantially in the range 1ms-2ms.

14. (Amended) A method according to claim 8, wherein a single pulse of light energy delivered is of sufficient energy to effect separation of the [screen] glazing panel from the frame along a length of the bonding material.

15. (Amended) A method according to claim 1, wherein the light energy delivery [means] apparatus is sized to enable it to be hand held and positionable relative to the glazing panel manually by an operator.

16. (Amended) A method according to claim 1, wherein the energy delivery [means] apparatus comprises electrical gas discharge apparatus.

19. (Twice Amended) A method according to claim 17, wherein the gas discharge [light emitting device] apparatus is fed with a current at times other than during a pulse event.

20. (Amended) A method according to claim 19, wherein the current is monitored to provide an indication of the operability of the gas discharge [light emitting device] apparatus.

21. (Twice Amended) Apparatus for releasing a glazing panel from a frame to which the panel is bonded by interposed bonding material, the apparatus comprising:

[light energy delivery means] a light energy delivery head arrangeable adjacent the glazing panel, [and] said delivery head including an electrically operable light emitting element that is operable to transmit non-laser, pulsed light energy comprising at least one light pulse event through the glazing panel to effect [thermal] release of the panel from the frame[.];

a base unit remote from the delivery head, the base unit including a supply of electrical power for the light emitting element of the delivery head; and

a flexible umbilical extending between and connecting the base unit and the delivery head.

23. (Twice Amended) Apparatus according to claim 21, [wherein the apparatus includes] further including a control [means] system to either one of adjust or limit at least one of:

the pulse repetition rate of successive light pulse events;

the duration of [a] the light pulse event; and

the intensity of the light delivered.

24. (Amended) Apparatus according to claim 21 including a control [means] system for controlling one or more apparatus parameters including the minimum permissible time elapsing between subsequent [discharge pulses of the electrical gas discharge apparatus] pulse events of the light emitting element.

25. (Amended) Apparatus according to claim 21, wherein the delivery [means] head includes a manual trigger for initiating a light pulse [when the delivery head is positioned to the operators satisfaction].

26. (Amended) Apparatus according to claim 21, wherein the apparatus includes a safety interlock [requiring] comprising at least two input devices [to] that must be actuated before light energy can be [delivered from the delivery means] output from the light emitting element.

27. (Amended) Apparatus according to claim 26, [including a delivery head from which the light energy is delivered,] wherein the delivery head [including] includes the at least two input devices [comprising the safety interlock, both input devices requiring actuation in order to enable light energy to be delivered from the delivery means].

28. (Amended) Apparatus according to claim 26, wherein the input devices comprise [electrical input devices (such as switch means)] switches.

29. (Amended) Apparatus according to claim 26, wherein following actuation the input devices [comprising the interlock] are reset to a non-actuation state.

31. (Amended) Apparatus according to claim 21, wherein the apparatus includes different preset settings which may be switched to [alter] adjust one or more parameters of the light energy delivered[, dependent upon the tint of the glazing panel to be de-bonded or other factors].

33. (Amended) Apparatus according to claim 21, wherein the light [energy delivery means] emitting element comprises an electrical gas discharge device.

35. (Amended) Apparatus according to claim 34, wherein the electrical gas discharge [apparatus] device includes a pair of light emitting discharge tubes arranged in side by side relationship.

36. (Amended) Apparatus according to claim 21, further comprising cooling means for cooling [a] the light emitting element [of the light energy delivery means].

37. (Twice Amended) Apparatus according to claim 36, wherein the cooling means comprises [air cooling means including an] at least one electrically operated fan.

40. (Amended) Apparatus according to claim 21, [wherein the apparatus includes] further including a reflector associated with the delivery head arranged to direct emitted light in a predetermined direction.

41. (Amended) Apparatus according to claim 21, wherein the [apparatus] delivery head comprises a window through which emitted light is directed [to pass through the glazing panel].

42. (Amended) Apparatus according to claim 21, wherein the [apparatus] delivery head comprises an edge guide arranged to locate against a running edge of the glazing panel.

44. (Amended) Apparatus according to claim [43] 21, wherein the light emitting element of the delivery head comprises an electrical gas discharge light emitting device, and the base unit [including] includes an electrical power arrangement having a capacitor for discharging through the electrical gas discharge light emitting device in the head via the umbilical.

48. (Amended) A glazing panel releaser for releasing a glazing panel from a frame to which the glazing panel is bonded by interposed bonding material, said glazing panel releaser comprising:

an optical delivery device to direct pulsed light through the glazing panel to effect release of the glazing panel from the frame; and

a control panel apparatus including different settings which are switchable to alter at least one parameter of the pulsed light energy delivered[, dependent upon the tint of the glazing panel to be released].

